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DATE: Thursday, June 16, 2005

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<i>DB=PGPB,USPT,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>			
<input type="checkbox"/>	L1	dent\$6 with ceramic	3712
<input type="checkbox"/>	L2	dent\$6 with ceramic powder	160
<input type="checkbox"/>	L3	dent\$6.clm. and ceramic powder.clm.	47

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<i>DB=PGPB,USPT,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>			
<input type="checkbox"/>	L1	dent\$6 with ceramic	3712
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<input type="checkbox"/>	L3	dent\$6.clm. and ceramic powder.clm.	47
<input type="checkbox"/>	L4	20020033548	2
<input type="checkbox"/>	L5	6322728.pn.	2
<input type="checkbox"/>	L6	L5 and silicone	0
<input type="checkbox"/>	L7	L5 and polymer	2
<input type="checkbox"/>	L8	dent\$6.clm. and ceramic.clm. and silicone.clm.	43
<input type="checkbox"/>	L9	dent\$6.clm. and ceramic powder.clm. and silicone.clm.	4

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L3: Entry 1 of 2

File: USPT

Nov 18, 2003

US-PAT-NO: 6648645

DOCUMENT-IDENTIFIER: US 6648645 B1

TITLE: Method for manufacturing dental restorations

DATE-ISSUED: November 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
MacDougald; Joseph A.	Madison	CT		
Panzera; Carlino	Bellemead	NJ		
Jia; Weitao	Wallingford	CT		
Brodkin; Dmitri	West Orange	NJ		
Schulman; Martin L.	Orange	CT		
Panzera; Paul	Mt. Holly	NJ		
Alpert; Bruce	Madison	CT		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Jeneric/Pentron Incorporated	Wallingford	CT			02

APPL-NO: 09/ 653377 [PALM]

DATE FILED: September 1, 2000

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATIONS This application claims priority to U.S. Provisional Application No. 60/152,264, filed Sep. 2, 1999, and U.S. Provisional Application No. 60/188,490, filed Mar. 10, 2000 which are incorporated herein by reference.

INT-CL: [07] A61 C 5/10

US-CL-ISSUED: 433/223; 433/212.1

US-CL-CURRENT: 433/223; 433/212.1

FIELD-OF-SEARCH: 433/218, 433/219, 433/223, 433/212.1, 264/19

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

 [Search Selected](#) [Search ALL](#) [Clear](#)

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>4265669</u>	May 1981	Starling	
<input type="checkbox"/> <u>4585417</u>	April 1986	Sozio	

<input type="checkbox"/> <u>4689197</u>	August 1987	Groll	
<input type="checkbox"/> <u>4798536</u>	January 1989	Katz	
<input type="checkbox"/> <u>4828495</u>	May 1989	Bell	
<input type="checkbox"/> <u>4879136</u>	November 1989	Polz	
<input type="checkbox"/> <u>4957440</u>	September 1990	Hankins	
<input type="checkbox"/> <u>4980124</u>	December 1990	Dimmer	
<input type="checkbox"/> <u>5080589</u>	January 1992	Oden	
<input type="checkbox"/> <u>5104591</u>	April 1992	Masuhara	
<input type="checkbox"/> <u>5121329</u>	June 1992	Crump	
<input type="checkbox"/> <u>5336091</u>	August 1994	Shoher et al.	433/215
<input type="checkbox"/> <u>5346397</u>	September 1994	Braiman	
<input type="checkbox"/> <u>5653791</u>	August 1997	Panzera	
<input type="checkbox"/> <u>5711833</u>	January 1998	Apte et al.	
<input type="checkbox"/> <u>5714025</u>	February 1998	Brungardt	
<input type="checkbox"/> <u>5776382</u>	July 1998	Kim et al.	264/16
<input type="checkbox"/> <u>5779833</u>	July 1998	Cawley et al.	
<input type="checkbox"/> <u>5788498</u>	August 1998	Wohlwend	
<input type="checkbox"/> <u>5839900</u>	November 1998	Billet	
<input type="checkbox"/> <u>5866058</u>	February 1999	Batchelder	
<input type="checkbox"/> <u>5900207</u>	May 1999	Danforth	
<input type="checkbox"/> <u>5910273</u>	June 1999	Thiel	
<input type="checkbox"/> <u>5916498</u>	June 1999	Hofmann	
<input type="checkbox"/> <u>5942063</u>	August 1999	Mori	
<input type="checkbox"/> <u>5958468</u>	September 1999	Kunkel	
<input type="checkbox"/> <u>5975905</u>	November 1999	Kim	

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
198 20 763	September 1997	DE	
0 328 772	August 1989	EP	
523019	January 1993	EP	
0 872 218	October 1998	EP	
60032706	February 1985	JP	
WO 94/08783	April 1994	WO	
WO 01/15620	August 2001	WO	

OTHER PUBLICATIONS

Dae-Joo Kim and Myung-Hyun Lee, Mechanical Properties of Tape-Cast Alumina-Glass Dental Composites. J. Am. Ceram Soc. 82[11]3167-72 (1999).
 Kappert, H.F., Knodel, H., In-Ceram: Testing a new ceramic material. Quintessence, vol. 16, 87-97, 1993.

ART-UNIT: 3732

PRIMARY-EXAMINER: Lewis; Ralph A.

ATTY-AGENT-FIRM: Knab; Ann M.

ABSTRACT:

A ceramic tape is provided in its green state so that it is malleable and formable to a mold for forming a dental restoration, but will not break or crack as it is applied to the mold. Pressure may be applied to further form or adapt the ceramic tape to the shape of the mold. Heat is applied simultaneously with pressure or in a separate step to achieve high density and strength in the ceramic material. A vacuum atmosphere may be used with the application of pressure and/or heat. One or more layers of surface material such as porcelain or composite resin may be applied to the ceramic to form the dental restoration. The process is useful in the manufacture of dental materials or restorations including but not limited to orthodontic appliances, bridges, space maintainers, tooth replacement appliances, splints, crowns, partial crowns, dentures, posts, teeth, jackets, inlays, onlays, facing, veneers, facets, implants, abutments, cylinders, and connectors.

Also provided is a ceramic powder in combination with one or more media materials to form a homogeneous mixture. The mixture may then be used to form a dental restoration as is or may be used to form feedstock such as filaments or wires which are then used to fabricate a dental restoration. The filaments or wires may be used in a fused deposition-modeling machine to build dental restorative materials by computer aided design software.

11 Claims, 7 Drawing figures

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<input type="checkbox"/>	L1	6648645.pn.	2
<input type="checkbox"/>	L2	L1 and green	2
<input type="checkbox"/>	L3	L2 and (sheet or film or tape)	2

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